Name: *Kyle Ness*   **Student number:** *461016*

Computer Science 260: Quiz 2

1. The transitive closure of the child relation is the *Sibling* ~~descendant~~ relation. ✗

2. Let $f(x) = 2x$ and let $g(x) = x^2$. Hence, $f \circ g(x) = \boxed{2x^2}$. (Insert ✓ mathematical expression).

3. A relation that is reflexive, symmetric and transitive is called an *Equivalence* relation. ✓

4. Consider the following program fragment

$\{X = a+b - a\}$ $s := a;$ $\{X = a+b-s\}$ ✓

$\{X+S = a+b\}$ $x := x + s$ $\{x = a + b\}$ ✓

Use the assignment rule and the concatenation rule to fill in the boxes. Do *not* use any other rules. Simplify the final result to get $\{X = b\}$. ✓

5. If $\{P\}C\{Q\}$ is proven, then $\{P_1\}C\{Q\}$ is also proven provided P_1 is *Weaker* than P. ✗
   Stronger

5/7

xR_x

$xR_y \longleftrightarrow yR_x$

$xR_y \quad yR_z \to x R_z$